

## CLAIMS

1. A respiratory aid apparatus for administering a controlled flow of respiratory gas to a user airways, the apparatus comprising:
  - a source of a high pressure respiratory gas;
  - a user interface unit located proximal to the user's air intake organs in fluid communication with the user airways, the user interface unit includes at least one Venturi device, the Venturi device comprises:
    - a hollow member, defining a central space, having a first end open to surrounding ambient air and a second open end directed toward the user airways; and
    - a first inlet port opening into said central space, the inlet is configured to direct compressed gas entering said central space toward the second end;
    - and
    - a low cross-section flexible tubing connecting between the source of high pressure respiratory gas and said inlet of said Venturi device.
2. The apparatus of claim 1 wherein the respiratory gas is air.
3. The apparatus of claim 1 wherein the source of high pressure respiratory gas is an oil-less air compressor.
4. The apparatus of claim 1 wherein the source of high pressure respiratory gas is a tank containing high pressure respiratory gas.
5. The apparatus of claim 4 wherein the respiratory gas is oxygen.

6. The apparatus of claim 1 wherein the tubing diameter is in the range of 2 –5 mm and wherein the pressure delivered to the user interface is in the range of 2 – 6 atmospheres.
7. The apparatus of claim 1 wherein the source of high pressure respiratory gas is provided with a regulator for regulating the output pressure of said source.
8. The apparatus of claim 1 further provided with at least one sensor for detecting respiratory cycle of the use and with at least one controller interposed between the source of high pressure respiratory gas and the user interface unit for controlling the pressure of compressed gas entering the interface unit via the first inlet port, in accordance with said sensor.
9. The apparatus of claim 7 wherein the sensor is incorporated within the user interface unit.
10. The apparatus of claim 8 wherein the sensor is selected from a sound transducer, a pressure detector or a temperature detector.
11. The apparatus of claim 1 wherein the user interface unit is any commercially available breathing mask.
12. The apparatus of claim 1 wherein the Venturi device further comprises a second inlet port opening into said central space and wherein said second inlet is configured to direct compressed gas entering the central space toward the first end for assisting removal of air from the user's airways.
13. The apparatus of claim 12 further provided with a controllable valve for directing the compressed air alternately to the first inlet port during inhalation phase and to the second inlet port during exhalation phase.

14. The apparatus of claim 1 wherein the user interface unit comprises two Venturi devices, each as defined in claim 1, the second end of each of said two Venturi devices is provided with a nasal adaptor to be inserted into a nostril of the user.
15. A gas delivery user unit, to be located proximal to the user's air intake organs, in fluid communication with the user airways, the user interface unit includes at least one Venturi device, the Venturi device comprises:
  - a hollow member, defining a central space, having a first end open to surrounding ambient air and a second open end directed toward the user airways; and
  - a first inlet port connectable via thin tubing to a source of high pressure respiratory gas, opening into said central space, the inlet is configured to direct compressed gas entering said central space toward the second end.
16. The gas delivery user interface unit of claim 15 further comprising a second inlet port opening into said central space, wherein said second inlet is configured to direct compressed gas entering the central space toward the first end for assisting removal of air from the user's airways.
17. The gas delivery user interface unit of claim 16 further provided with a controllable valve for directing the compressed air alternately to the first inlet port during inhalation phase and to the second inlet port during exhalation phase.
18. The gas delivery user interface unit of claim 15 further comprising a sensor for detecting respiratory cycle of the user.

19. The gas delivery user interface unit of claim 15 comprising two venturi devices, each as defined in claim 15, the second end of each of said two venturi devices is provided with a nasal adaptor to be inserted into a nostril of the user.
20. The gas delivery user interface unit of claim 19 wherein the two venturi devices are mounted on a mouth piece such that when the mouth piece is inserted into the user mouth, each of the two venturi devices is directed toward one of the user's nostrils.
21. The gas delivery user interface unit of claim 19 wherein the two venturi devices are mounted on a connecting member such that when the connecting member is placed between the upper lip and the nose of the user, each of the two venturi devices is directed toward one of the user's nostrils and wherein the user interface is strapped to the user head by the thin tubing delivering the compressed gas into the user interface.
22. A method for supplying a controlled pressure of respiratory gas of to a user, the method comprising:
- delivering a high pressure respiratory gas via a thin tubing to a user interface in fluid communication with the user airways, the user interface is having an inlet port connectable to said thin tubing; and
  - accelerating the high pressure respiratory gas upon entering the user interface by means of a Venturi device located at the inlet port of the user interface, the Venturi device is configured to direct flow of compressed air toward the user airways, the Venturi device is having an end open to surrounding ambient air;
- thereby pumping ambient air into the user interface.

23. The method of claim 22 wherein the respiratory gas is air.
24. The method of claim 22 further comprising controlling the pressure of the high pressure respiratory gas delivered to the user interface.
25. The method of claim 22 further comprising stopping the delivery of high pressure respiratory gas during exhalation phase.
26. The method of claim 22 wherein the Venturi device is provided with an additional inlet configured to direct compressed air toward the end open to ambient air and wherein the method further comprising delivering the high pressure respiratory gas to said additional inlet for assisting removal of air from the user airways during exhalation phase.
27. The use of a Venturi device incorporated into a user interface unit in fluid communication with a user airways for administering a controlled pressure of air to the user.